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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,625	03/04/2002	Nobuo Kochi	035924-0103	6914

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FOLEY AND LARDNER
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

HUGHES, JAMES P

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/086,625

Applicant(s)

KOCHI ET AL.

Examiner

James P. Hughes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 20-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 20-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Applicant's election of the apparatus and method for forming three dimensional specimen shapes represented by claims 1-19 in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on three applications filed in Japan on March 6, 2001. It is noted, however, that applicant has not filed certified copies of the applications as required by 35 U.S.C. 119(b).

Claim Objections

Grammatical Objections

3. Claims 1 and 2 are objected to because of the following informalities. The claims are unclear because they are not grammatically correct. An article, such as – a –, is missing before the word “specified” (line 12 of the claim1 and line 12 of claim 8). Claims 2-7 are objected to as they inherit the deficiencies of claim 1. Claim 9 is objected to as it inherits the deficiencies of claim 1. Appropriate correction is required.

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4. Claim 5 is objected to because of the following informalities. The claim is not grammatically correct and therefore confusing. An article, such as – The –, is missing before the word “deviation” (line 5 of the claim). Appropriate correction is required.

5. Claim 8 is objected to because of the following informalities. The claim is unclear because it is not grammatically correct. A preposition, such as – a – is missing before the word “specified” in line 12 of the claim. Claim 9 is objected to as it inherits the deficiencies of claim 8. Appropriate correction is required.

Word / Phrase Objections

6. Claims 1-7 and 10-19 are objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “under the condition of a **relative** tilt angle” [emphasis added] (e.g., line 13 of claim 1) is indefinite because the term “relative” is unclear in its usage in the claim. The term “relative” is similarly used in an unclear manner numerous times in claims 6, 10, 11, 12, 18, and 19. For example, claims 10 and 11 recite “first relative tilt angle” and “second relative tilt angle”. Claims 2-5, 7, and 13-17 are objected to because they inherit the deficiencies of their respective base claims.

7. Claim 10 is objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “a specimen tilting section for relatively tilting said specimen holder and said incident electron beam” in lines 7-9 is indefinite because it is unclear if the specimen tilting section tilts said specimen holder or the incident electron beam, or both?

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8. Claim 10 is objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “a specimen tilting section for **relatively** tilting said specimen holder and said incident electron beam” [emphasis added] in lines 7-9 is indefinite because it is unclear what constitutes “relatively” tilting. Is the recitation to “relatively” intended to refer to a small – as in a “relatively small” – amount of tilting, or is it referring to something else? Appropriate correction is required.

9. Claim 12 is objected to because it recites the limitation "**the** conditions for measuring" (Emphasis added) in lines 11-12. There is insufficient antecedent basis for this limitation in the claim. Claims 13-17 are rejected as they inherit the deficiencies of claim 12. Appropriate correction is required.

Claim Clarity Objections

10. Claims 1 and 8 are objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are indefinite because they do not clearly describe how the data correcting section corrects the three-dimensional data to have a specified relationship (lines 11-14 of claim 1 and lines 10-12 of claim 8). Claims 2-7 and 9 are objected to because they inherit the deficiencies of claims 1 and 8, respectively. Appropriate correction is required.

11. Claim 5 is objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is indefinite because it does not clearly describe how the data correcting section uses said reference

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marks to correct deviation of said three-dimensional detection data into rectified data (lines 4-6).

Appropriate correction is required.

12. Claim 6 is objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is indefinite because it is unclear as to how an image data rectifying means corrects the three-dimensional data into rectified data using the rectifying parameters acquired (lines 8-10).

Appropriate correction is required.

13. Claims 7 and 9 are objected to as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are indefinite because it is unclear as to how a stereovision section forms a three-dimensional image of the specimen on the basis of the data corrected with the data correcting section (lines 6-9 of both claims). Again, the operation of the data correcting section, as discussed above, is unclear.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claim 1 recites the limitation "the three-dimensional detection data" in lines 11-12.

Following, claims 5 and 6 recite the limitation "said three-dimensional detection data" numerous times. There is insufficient antecedent basis for this limitation in the claim. Claims 2-7 are rejected as they inherit the deficiencies of claim 1.

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15. Claim 8 recites the limitation "said three-dimensional detection data" in line 11. There is insufficient antecedent basis for this limitation in the claim. Claim 9 is rejected as it inherits the deficiencies of claim 8.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-5, 7-10, 12-15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato et al. (4,039,829). Kato et al. (4,039,829), hereafter referred to as Kato '829, teaches an apparatus and method for forming stereoscopic three-dimensional images of specimens in addition to making three-dimensional measurements of said specimens. The basic device and method taught Kato '829 by are very well known in the art. The device and method comprise a scanning electron microscope (SEM) wherein an electron beam is emitted from an electron beam source (102) and directed onto a specimen (103), held by a specimen holder, via an electron optical system (e.g., 105,106); after the electron beam impinges on to the specimen (103), secondary and backscattered electrons beams are emitted and detected by a detector (104) which produces a signal that is used in data processing and imaging. A 3-D stereoscopic image is formed by scanning the specimen (103) with the electron beam from two relative angles (or first and second detection data) – creating a "left" and "right" view – and then combining the two resulting images. The relative tilt angles may be created through either changing the inclination

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angle of the electron beam (e.g., Col. 4, ll. 7-15), or tilting the sample stage relative to the incident electron beam for each of the two relative tilt angles and subsequently storing each image into a storage device. After storage, the images may be read out simultaneously or alternatively and displayed on an image surface to create a stereoscopic image. (See e.g., Col. 4, ll. 15-26) Thereby, a data correcting section corrects the three-dimensional detection data to have a specified relationship (e.g., presented on the same screen) under the condition of a relative tilt angle between said specimen holder and said electron beam.

Additionally, Kato '829 teaches a three-dimensional shape measuring (and measurement condition judging) section (e.g., 110, 112, 113, 114) for measuring the shape of said specimen (or correcting the detection data into rectified data) – using reference marks that may serve as reference positions – on the basis of the data corrected with said data correcting section and presented in stereovision, wherein, said shape measuring section (e.g., 110, 112, 113, 114) may also employ the state of differences in distortion and in scale. (See e.g., Col. 4, ll. 26-65)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 6, 11, 16, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (4,039,829). Kato et al. (4,039,829), hereafter referred to as Kato '829, teaches an apparatus and method for forming stereoscopic three-dimensional images of specimens in

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addition to making three-dimensional measurements of said specimens as discussed in section 16 above. Kato '829 does not explicitly teach using a reference template with reference marks serving as reference positions in place of the specimen prior to measuring a specimen. However, as it is well known that reference templates may be used to generate reference positions when making measurements using electron microscopes; it would have been obvious to one of ordinary skill in the art at the time of the invention to use a reference template with reference marks serving as reference positions in place of the specimen prior to measuring a specimen in the invention of Kato '829 because it would allow for efficient operation.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kato et al. (4,755,047) teaches stereoscopic shape measuring method and device wherein the well-known method of SEM stereoscopic data collection is disclosed that employs tilting the specimen and collecting data from at least two scans at different relative tilt angles and three-dimensional information is derived by processing appropriately the parallax errors. (Col. 1, ll. 15-32)

Kato et al. (4,725,730) teaches a method and device for automatically conducting measuring three-dimensional measurements using an SEM and a measurement template. (See, e.g., Col. 1, ll. 13-60; Col. 2, ll. 20-38; and Col. 3, 25-65)

Kato et al. (5,001,344) teaches a method and device for conducting 3D measurements using an SEM, which employs a measurement template. (See, e.g., Col. 6, ll. 50-65)

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Yoda et al. (6,661,507) teaches measurement device and method employing a reference template. (See, Col. 6, ll. 20-35)

Komatsu et al. (5,029,250) teaches a pattern imaging and measurement device and method using an SEM. Komatsu et al. teaches that an electron beam may be scanned over a sample that is tilted at different angles. (See, e.g., Col. 3, ll. 30-45 and Col. 5, ll. 30-35)

Iwabuchi et al. (5,894,124) teaches a device and method using an SEM to image a tilted sample. (Abstract)

Fleming (2,617,041) teaches a stereoscopic electron microscope. (Abstract) Smith et al. (2,436,676) teaches a stereoscopic SEM. (Abstract) Sato (4,233,510) teaches an SEM with the well-known concept that distance measurement incorporates the magnification. (Abstract)

Seiler et al. (4,766,311) teaches a method and apparatus for precision SEM measurements employing multiple scans and the well-known practice of measurement reference template. (See, e.g., Col. 1, ll. 62 – Col. 2, ll. 10)

Breton et al. (4,943,722) teaches a device and method for forming a stereoscopic image using an SEM. (Abstract)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James P. Hughes whose telephone number is 571-272-2474. The examiner can normally be reached on Monday - Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on 571-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James P. Hughes
Patent Examiner
Art Unit 2881

JH

Nikita Wells 02/20/04

**NIKITA WELLS
PRIMARY EXAMINER**